

# SNANA Installation Guide

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## 1 Overview

The installation of SNANA involves two tarballs. First is the SNANA software that includes all of the source code and a Makefile. The second tarball, called “SNDATA\_ROOT,” contains data (§4), a simulation-output directory, K-correction tables, model parameters, filter responses, primary spectra (Vega, BD17), etc. Environment variables `$SNANA_DIR` and `$SNDATA_ROOT` must be defined to point to these two areas, and it is convenient to define these in a login script. You will also need to add `$SNANA_DIR/bin` and `$SNANA_DIR/util` to your path. It is recommended that `$SNANA_DIR` be write-protected, while `$SNDATA_ROOT` has write-access for all users. Once you have installed SNANA, see the `snana_manual` for instructions on running the programs.

At least 2 Gb of memory is needed to run the SNANA programs. The SNANA software tarball expands to 25 MB after the Makefile script has run, and the SNDATA\_ROOT tarball expands to a few Giga-bytes.

## 2 Linux

To use the SNANA package, you need to have the 32-bit versions of CERNLIB, CFITSIO, libncurses, GSL, glibc, and libz installed. On 64-bit machines, if you get errors about incompatible libraries check to make sure you have the 32-bit versions installed and that they are visible. If your version of CERNLIB comes with nypatchy instead of ypatchy, then make a symbolic link named ypatchy pointing to nypatchy.

In the following, \$SOFTDIR refers to the top-directory of your software packages, and \$SCRATCHDIR refers to your working area or scratch disk.

After installing CERNLIB and CFITSIO in \$SOFTDIR/cern and \$SOFTDIR/cfitsio, respectively, and assuming you are using the tcsh shell, do, e.g.:

```
> setenv CERN_DIR $SOFTDIR/cern
> setenv PATH $CERN_DIR/bin:$PATH
> setenv LD_LIBRARY_PATH $CERN_DIR/lib:$LD_LIBRARY_PATH
> setenv CFITSIO_DIR $SOFTDIR/cfitsio
> setenv GSL_DIR $SOFTDIR/gsl
```

Download the most recent SNANA tarball to \$SOFTDIR/SNANA and do

```
> cd $SOFTDIR/SNANA
> tar xzf snana_v7_07.tar.gz
> cd snana_v7_07/src
> make
    (hold your breath ... )
> setenv SNANA_DIR $SOFTDIR/SNANA/snana_v7_07
> setenv PATH $SNANA_DIR/bin:$SNANA_DIR/util:$PATH
```

Once you have the SNANA software installed, download the most recent SNANA\_ROOT tarball to \$SCRATCHDIR/SNANA\_ROOT, and do

```
> setenv SNANA_ROOT $SCRATCHDIR/SNANA_ROOT
```

## 2.1 Troubleshooting

1. If you get errors similar to

```
$SOFTDIR/cern/2004/lib/libpacklib.a(cfclos.o)(.text+0xa):  
In function 'cfclos_': : undefined reference to 'rfio_close'
```

then, in \$SNANA\_DIR/src/Makefile, replace “-lkernlib -lpacklib” with “-lkernlib\_noshift -lpacklib\_noshift” if you have the latter with your CERNLIB distribution. If not, then try installing the appropriate version from the CERNLIB page.

2. If you have a 64-bit machine of type other than x86\_64, then modify the BITNESS logical test in the Makefile so that the -m32 flag is used.

### 3 Mac OS with Intel Processor

1. Make sure you have a working gfortran. For example, the binary from <http://hpc.sourceforge.net>.
2. g95 is needed for Sussex cosmology fitter sncosmo\_mcmc. For example, the binary from <http://www.g95.org>
3. Make sure you have a working CFITSIO; for example, Scisoft OSX at <http://web.mac.com/npirzkal/Scisoft/Scisoft.html>
4. Install CERNLIB. Can use 'fetch\_and\_build\_cern.sh' script from <http://home.fnal.gov/~rhatcher/macosx/> . To run that script, 'g77' must exist as a symbolic link to gfortran. If you have Scisoft, unsetenv F77 and F2C. Once CERNLIB is installed, add the CERN environment variables to your shell startup. Cernlib2005-gfortran also works via fink, but it installs a lot of other stuff too; the script above is cleaner.
5. After installing CFITSIO and CERNLIB, set environment variables CFITSIO\_DIR and CERN\_DIR to point to their locations. For example,

```
% setenv CFITSIO_DIR /Scisoft/i386/Packages/cfitsio
% setenv CERN_DIR /usr/local/cern/2005
```

6. Install GSL.
7. Download the latest SNANA release and unarchive it somewhere. This directory MUST be referred to as SNANA\_DIR, e.g.

```
% setenv SNANA_DIR /usr/local/snana_v8_03
```

8. Compiling:

```
% cd $SNANA_DIR/src
% setenv FC gfortran
% make
```

9. Download the SNDATA\_ROOT tarball, and define

```
% setenv SNDATA_ROOT /path/to/sndata_root
```

## 4 Data Samples in Download

The downloads include SN data versions in `$SNDATA_ROOT/lcmerge`.<sup>1</sup> Each SN data version corresponds to a published data set that has been converted into the format needed for the SNANA light curve fitter. To see a summary of the available data samples,

```
> cd $SNDATA_ROOT/lcmerge/  
> ls *.README
```

and then “more” any README file for details.

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<sup>1</sup>“lcmerge” refers to the merging of data and meta-data such as PSF, skynoise, moon, etc ...